

**FIVE YEAR REVIEW
SEPTEMBER 2000
MIAMI COUNTY INCINERATOR SITE
MIAMI COUNTY, OHIO**

I. INTRODUCTION

A. Authority and Purpose

The United States Environmental Protection Agency (U.S. EPA), Region 5, conducted this five-year review under Section 121 (c) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and National Contingency Plan (NCP) Section 300.430(f)(4)(ii). The purpose of a five-year review is to evaluate whether a completed remedial action remains protective of human health and the environment and is functioning as designed at sites where hazardous waste remains on-site at levels that do not allow for unlimited use and unrestricted exposure. The Type I review conducted for this site is applicable to a site where construction is complete and there are no factors which suggest a higher level of review is necessary. This five-year review report shall become part of the U. S. EPA administrative record file for the Miami County Incinerator Superfund Site, which is available for review at the U.S. EPA Region 5 office, Chicago, Illinois. A copy of this five-year review report will also be placed in the local repository at the Miami County Public Library located at 419 W. Main Street, Troy, Ohio, and at the Ohio EPA Southwest District Office, 401 E. Fifth Street, Dayton, Ohio, for viewing during normal business hours.

B. Site History

The Miami County Incinerator (MCI) Superfund Site (the Site) is located on State Route 25A in Miami County, approximately two miles north of the City of Troy, Ohio. The Site consists of 65 acres of county owned land in Concord Township. The Great Miami River is located approximately 1,500 feet east of the Site. Current land usage of adjacent properties to the north, south and west of the Site is mostly agricultural and rural residential. An automobile junkyard is adjacent to the northeast portion of the Site. Land use adjacent to the east and southeast portions of the Site is primarily municipal (county). MCI began operation in 1968 accepting household, commercial, and industrial wastes. Non-burnable solid wastes were land filled while liquid wastes were burned or dumped directly into an unlined, open pit. The Ohio EPA ordered the facility to cease disposal of liquid waste by April 1974, but some liquid waste disposal continued until March 1975. The total estimated volume of landfilled liquid waste exceeds 8,000,000 gallons. In 1974, the facility failed to meet air emissions standards and its incinerator license was not renewed. Landfilling of waste continued until October 1978 when the facility converted to its present use, a solid waste transfer station.

The Site was placed on the National Priorities List (NPL) in October of 1984. U.S. EPA conducted a Remedial Investigation and Feasibility Study (RI/FS) which detected fifty-nine contaminants of concern in the soils and groundwater at the Site. Contaminants were detected in residential and monitoring wells down gradient of the Site in excess of the Safe Drinking Water Act (SDWA) Maximum Contaminant Levels (MCL's). The Liquid Disposal Area (LDA) is the primary source of the contaminant plume that has affected groundwater as far away as 3/4 mile from the Site. In 1989, affected residents were connected to the City of Troy water supply.

II. REMEDY SELECTION

A. Remedial Investigation/Feasibility Study (RI/FS)

U.S. EPA conducted the RI/FS for the Site between 1987 and 1989. The RI/FS report for the Site was completed in February of 1989. The objectives of the RI were to:

- Identify and characterize sources of contamination;
- Characterize and evaluate contaminant migration pathways;
- Define the nature and extent of contamination at the Site;
- Identify and evaluate the nature and magnitude of risks of Site related contaminants to human health and the environment to determine the necessity and range of remedial actions that may be required; and
- Acquire sufficient Site information to prepare a FS to evaluate remedial alternatives.

Data gathered during the RI identified several areas of the Site which were most likely to be sources of contamination. Groundwater migrating from the Site was found to be contaminated with a variety of organic and inorganic compounds. The greatest variety and highest concentrations of contaminants were detected in groundwater down gradient of the LDA. The contaminants were primarily VOCs such as chlorinated ethenes and ethenes, vinyl chloride, toluene and benzene, although some semi-volatile compounds were also present. Inorganic compounds detected at concentrations above background include arsenic, barium, cadmium, chromium, cobalt, copper, lead, nickel and zinc.

An endangerment assessment was also conducted as part of the RI for the Site. The endangerment assessment identified potential exposure pathways for current and future land uses if no action were taken. It developed exposure scenarios and evaluated potential risks to human health and the environment associated with potential exposures under these scenarios. The results of the endangerment assessment were used to focus the analysis of remedial alternatives evaluated in the FS. The areas

identified which represent potential risks to human health and the environment included: the Ash Pile, the Ash Disposal Pit, the Liquid Disposal area and the North and South Landfills.

B. Record of Decision

On June 30, 1989, U.S. EPA issued a Record of Decision (ROD) which selected the cleanup remedy at the Site. Following the issuance of the ROD, the Potentially Responsible Parties (PRPs) generated new information which resulted in a modification of the remedy selected in the ROD. While the overall remedy was not fundamentally altered, changes were made to several components of the remedy selected in the ROD. In accordance with CERCLA Section 117(c), U.S. EPA prepared an Explanation of Significant Differences (ESD) addressing those changes and setting forth the reasons those changes were made. The changes to the ROD were made because new information led U.S. EPA to determine that modifications could be made to several components that would achieve performance standards equivalent to those enunciated in the ROD in a more cost effective manner.

III. REMEDIAL DESIGN/REMEDIAL ACTION (RD/RA) RESPONSE ACTIONS

A. Remedial Activities

The approved remedy for the Site is presented in the Remedial Design/Remedial Action Scope of Work, Miami County Incinerator Site, Miami County, Ohio (SOW), dated August 1989. The ROD was used as the basis for the SOW and the remedial components identified in the SOW were implemented in accordance with the Consent Decree entered with the court on March 30, 1993.

The remedial action goals of the ROD are to minimize risks to human health and the environment through the combined use of engineering and institutional controls to prevent contact with contaminated media and to restore contaminated groundwater to risk-based cleanup goals. The following is a summary of the remedy for each area addressed in the ROD:

1. South Landfill: Began 4/95 ended 12/95
 - a. Closure according to State Landfill Requirements
 - 12 inches compacted barrier layer achieving a maximum of 1.0×10^{-7} cm/sec hydraulic conductivity
 - 12 inches of cohesive soils
 - 6 inches of drainage media
 - 6 inches of vegetative soil
 - b. Fence landfill area and post warning signs
 - c. Deed notifications/property use restrictions to prohibit use of groundwater and prevent exposure to contaminants
 - d. Ongoing monitoring

2. North Landfill: Began 4/96 ended 12/96
 - a. Closure according to State Landfill Requirements
 - 12 inches compacted barrier layer achieving a maximum of 1.0×10^{-7} cm/sec hydraulic conductivity
 - 12 inches of cohesive soils
 - 6 inches of drainage media
 - 6 inches of vegetative soil
 - b. Fence landfill area and post warning signs
 - c. Deed notifications/property use restrictions to prohibit use of groundwater and prevent exposure to contaminants
 - d. Ongoing monitoring
3. Ash Disposal Pit and Ash Pile: Began 4/95 ended 12/95
 - a. Excavation and consolidation of ash wastes and contaminated soils for placement beneath North and South Landfill caps.
 - b. Ash Disposal Pit was capped in place. This cap consisted of a Type II polyethylene geotextile fabric, 2 feet of re-compacted clay, 40-mil HDPE flexible membrane liner, Type I non-woven, needle punched polypropylene geotextile filter fabric layer, 1 foot 4-inch aggregate base and an 8 inch thick reinforced concrete pavement. The area is currently used by Miami County as a parking area for truck trailers at the new solid waste transfer station. The construction of the parking area for the solid waste transfer station was completed outside the scope of the Consent Decree.
 - c. Treatment if required under RCRA
4. Liquid Disposal Area and Groundwater: Began 4/96 ended 12/96
 - a. Vapor Extraction
 - Vacuum extraction of VOC's from waste & soils
 - Vapor phase carbon treatment or equivalent, catalytic oxidation or other appropriate treatment of exhaust
 - b. Groundwater pump and treat with discharge to Troy POTW
 - c. Double barrier cap
 - 12 inches compacted barrier layer achieving a maximum of 1.0×10^{-7} cm/sec hydraulic conductivity
 - 12 inches of cohesive soils
 - 40-mil HDPE liner
 - 9 inches of drainage media
 - 9 inches of fill material
 - 6 inches of vegetative soil
 - d. Ongoing monitoring
 - e. Continue connection of residential and commercial groundwater users to potable water supply (completed 1989)

- f. Prevent drilling of new wells that may expose groundwater users to contaminants or interfere with the remedial action at the Site. This was implemented through the use of deed restrictions and notifications in the property deed.
- 5. Former Waste Water Scrubber Lagoon: Began 4/95 ended 12/95
This area was backfilled with clean fill during Phase II remediation activities and deed restrictions were implemented to prohibit residential land use.
- 6. Stained Soil Area:
This area had low levels of some contaminants but the risks associated with these contaminants were below the U.S. EPA target cancer risk of 1E-04 to 1E-06 and the target HI of 1.0 and were therefore considered to be acceptable.
- 7. Eldean Tributary:
Additional sampling of the sediments in this area indicated that no further remedial action was necessary.

The Remedial Construction (RC) activities were broken into two phases, Phase I and Phase II. Activities associated with Phase I included items 1, 3 and 5, above with the exception of the Ash Disposal Pit. The PRPs requested that the Ash Disposal Pit be capped in place with a double barrier cap plus two feet of reinforced concrete. This enabled Miami County to use this area as a transfer station parking area. Activities associated with the Ash Disposal Pit capping were completed outside of the Scope of the Consent Decree. The Ash Disposal Pit cap was completed in 1993 whereas Phase I activities were completed 12/4/95. Activities associated with Phase II included items 2 and 4 above. Phase II activities were completed 12/5/96. The RC activities conducted at the Site complied with all U.S. EPA quality assurance and quality control (QA/QC) procedures and protocol.

Currently, RC activities are complete. The remedies are in place and functional. The Site entered Operation and Maintenance (O&M) activities following a one year commissioning period. During this one year commissioning period, all performance deficiencies of the RA systems were corrected.

B. Remedy Performance

The two active remedial systems implemented at the Site are the soil vapor extraction system (SVE) and the groundwater extraction system (GWES). The remedial goal of the SVE system is to substantially reduce the suspected source of VOC groundwater contamination in the LDA. The remedial goal of the GWES is to prevent continued migration of contaminated groundwater from the Site and restore groundwater to

cleanup standards consistent with CERCLA and SARA. The cleanup standards for Site groundwater are as follows:

- 1) Maximum Contaminant Levels (MCLs) established under the Safe Drinking Water Act (SDWA) at present or adopted during the operation of the GWES, including the following contaminants for which the MCLs were exceeded at the Site at the beginning of operation of the GWES;

barium	1000 ppb(parts per billion)
trichloroethene	5 ppb
1,1,1-trichloroethane	200 ppb
vinyl chloride	2 ppb

- 2) Water Quality Criteria (WQC) established under the Clean Water Act (CWA) at present or adopted during the operation of the GWES that have been adapted for drinking water only (set forth in the Superfund Public Health Manual) or designed for the protection of aquatic organisms; for compounds for which MCLs of WQC have not been established, a maximum cumulative excess lifetime cancer risk of 1×10^{-5} along a north-south line located east of the B&O Railroad which approximates the boundary of the waste management area, and a maximum cumulative excess lifetime cancer risk of 1×10^{-6} at the Site boundary or at any on-site receptor.

The risk calculations shall be performed in accordance with the methods specified in the Superfund Public Health Manual and any subsequent revisions in effect at the time of the calculations. The toxicity data used shall be the most current data contained in such manual or available from U.S. EPA's Cancer Assessment Group. The compounds to be considered in the calculation of the cumulative excess lifetime cancer risk shall include all compounds identified at the time of the calculations as possible, probable or known human carcinogens, including the following compounds currently designated as such, that have been detected in the groundwater at the Site:

arsenic
methylene chloride
trichloroethene
vinyl chloride
tetrachloroethene
bis(2-ethyl hexyl)phthalate
n-nitrosodiphenylamine, and

a maximum Hazard Index (HI) of one, calculated in accordance with the Superfund Public Health Manual and any subsequent revisions, for all compounds identified in the groundwater at the Site for which data required for the HI calculation are available, including the following compounds:

antimony
barium
toluene

These cleanup standards shall be met unless a waiver is agreed to by U.S. EPA, in accordance with relevant provisions of the Consent Decree.

Soil Vapor Extraction System

The SVE system located in the LDA, became operational in November of 1996. The PRPs petitioned U.S. EPA to shut down and decommission the SVE system in correspondence dated October 6, 1999. The PRPs concluded that the SVE system had met the termination criteria specified in the Site O&M Plan. These criteria are:

"Operation of the SVE system will continue until the extracted volatile organic compound (VOC) rate is less than 1 pound per day based on the mini-canister sampling and analyses as described above, or until asymptotic conditions are evident for greater than 6 months."

The PRP indicated that analytical results of the mini-canister sampling showed that asymptotic conditions had occurred over the previous 12 months of operation. U.S. EPA requested additional information and a comprehensive statistical evaluation of the SVE system influent analytical data to support the attainment of the termination criteria specified O&M Plan. The PRPs provided the requested information and evaluation and responded to U.S. EPA comments in correspondence dated January 28, 2000. U.S. EPA gave verbal approval for the decommissioning of the SVE system with concurrence from Ohio EPA. The decommissioning of the SVE system was completed in July of 2000 and a report detailing the work and certifying completion of the decommissioning was submitted on August 17, 2000.

The SVE system removed approximately 3,789 pounds of VOCs during operation from November 1996 to August 1999.

Groundwater Extraction System

The Groundwater Extraction System (GWES) consists of two components; the Boundary Containment System (BCS) and the Source Control System. (SCS). The BCS is for hydraulic containment of groundwater in the upper and lower aquifer at County Road 25A. The SCS is used to contain the groundwater contaminant plume down gradient of the LDA. The extracted groundwater is discharged directly to the Miami County sanitary sewer system for treatment by the City of Troy POTW.

The BCS consists of four extraction wells (EW-1 through EW-4) which pump at a combined rate of approximately 140 GPM. The SCS consists of one extraction well pumping at a rate of approximately 5 GPM. The performance of the GWES is evaluated through water level monitoring in monitoring wells at the Site. This performance monitoring currently occurs on a quarterly basis. The results of the water level measurements are contoured and plotted on a map of the Site to determine if

drawdown in the vicinity of the extraction wells is occurring. Currently, extraction wells EW-2, EW-3, EW-4 and PW5A (SCS well) appear to be operating as designed and within the performance standards specified in the ROD. However, the capture zone for EW-1 may not be sufficient to prevent contaminated groundwater in the lower aquifer present in the vicinity of monitoring well cluster CH16 (A and B) from migrating off-site. This observation is based on water level data from the first two quarters of 2000 and analytical data from well CH16B. The analytical data suggest that although concentrations of vinyl chloride have decreased over the last three sampling events, relatively high levels (170 ppb) are still present in the vicinity of the well. The July 2000 Groundwater Extraction and Soil Vapor Extraction Summary Report indicates that groundwater extraction rates have been increased in this area to improve the horizontal extent of capture.

The GWES has extracted a total of 218,726,637 gallons of groundwater from startup in November 1996 through June 2000. Approximately 15,885 pounds of VOCs were discharged for treatment by the City of Troy POTW during this time period.

IV. ARARs REVIEW

The RA for the Site complies with the performance standards specified in the ROD and ESD. These standards remain protective of human health and the environment. The approved Remedial Action Report dated February 1997, verifies that construction of the remedy was completed using sound engineering requirements. Based on the Remedial Action Report and observations made during the site visit and walkover, U.S. EPA and the Ohio EPA believes that the landfill caps and associated fencing around the Site is adequate to protect against inhalation, ingestion and direct contact with landfill materials, to prevent significant quantities of landfill materials from eroding off-site and to prevent significant infiltration of water into the landfill.

Based on an interview conducted with the Site O&M manager, Doug Evans, deed restrictions that prevent access, excavation or disturbance of the cap or the installation of wells are in place.

V. SUMMARY OF SITE VISIT

The Ohio EPA conducted a Site visit on August 22, 2000. Present during the Site visit were James Carleton, representing BIEC, Steve Whillier of CRA and Doug Evans, Site manager employed by Miami County Engineers Office and Chuck Mellon of the Ohio EPA. After a brief meeting, a walkover of the Site was conducted. During the walkover, the primary components of the GWES (extraction well vaults, controllers and electrical system) and the landfill cover and Site fencing were visually inspected. The GWES appeared to be in good condition and was operational. There were no obvious signs of subsidence or erosion of the landfill covers. The covers were completely vegetated with no signs of stress. The fence around the Site was in good condition.

After the Site walkover, the Site manager and others were interviewed regarding the availability of documents (HASP, O&M manual, OSHA training certificates, etc.). The Site manager and others present representing the PRPs indicated that all were readily available and up to date. The Site manager was also questioned about O&M costs and whether there had been any unusual or unexpected costs. A tabulation of the actual costs were not readily available, but the Site manager and others present said there had been no unusual operating costs and that the O&M costs had remained fairly constant.

VI. RECOMMENDATIONS

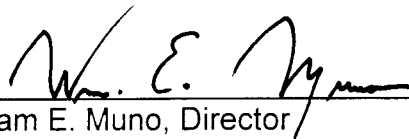
- 1) Continued monitoring and maintenance of the North and South landfill caps, perimeter security fence, soil and vegetative cover;
- 2) Continued monitoring and maintenance of the concrete cap over the former Ash Disposal Pit; and
- 3) Continued operation, monitoring and maintenance of the GWES with an evaluation of the effect of increased pumping in the vicinity of EW-1 and monitoring well CH16 (A and B).

VII. STATEMENT OF PROTECTIVENESS

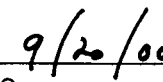
The remedy selected for the Site remains protective of human health and the environment. The remedy for the Site has been constructed and appears to be operating in accordance with the performance standards specified in the ROD and ESD. Affected residents were connected to the City of Troy water system in 1989.

VIII. NEXT FIVE YEAR REVIEW

The next five year review will be conducted by April of 2005, which will be ten years from the implementation of the remedy at the Site.



William E. Muno, Director
Superfund Division



Date